

Systems Thinking in a Nutshell

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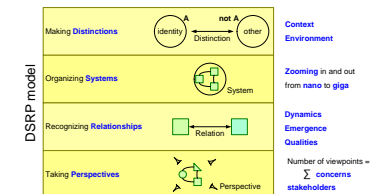
Abstract

Systems Thinking is a way of thinking to help understand the problem and solution space. It entails a.o. distinguishing systems and seeing them in their context, being able to zoom in and out, to recognize relations and understand dynamics and emergence, and to take many perspectives. In this presentation we illustrate this with an example.

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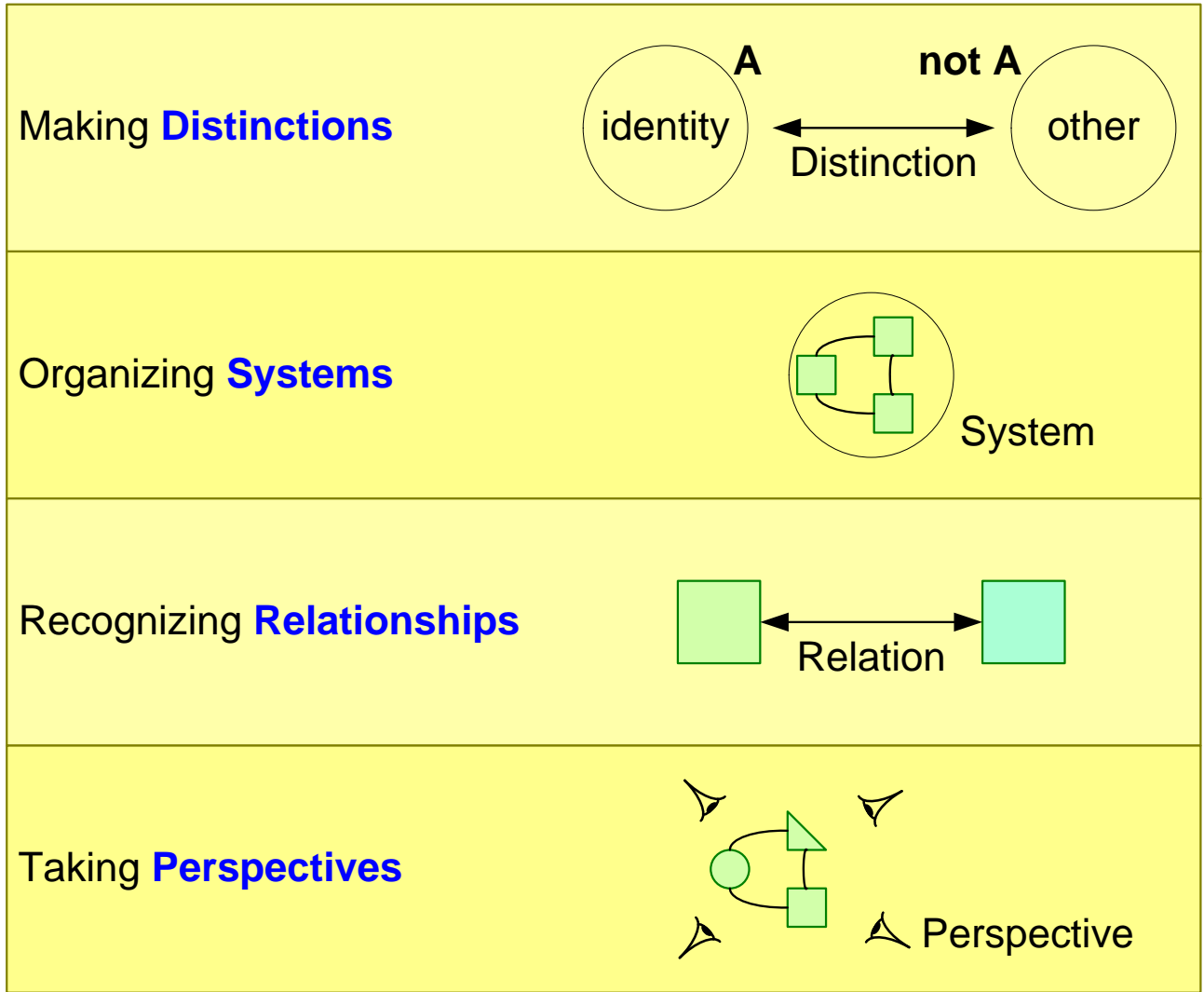
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Explaining Systems Thinking with the DSRP Model

DSRP model



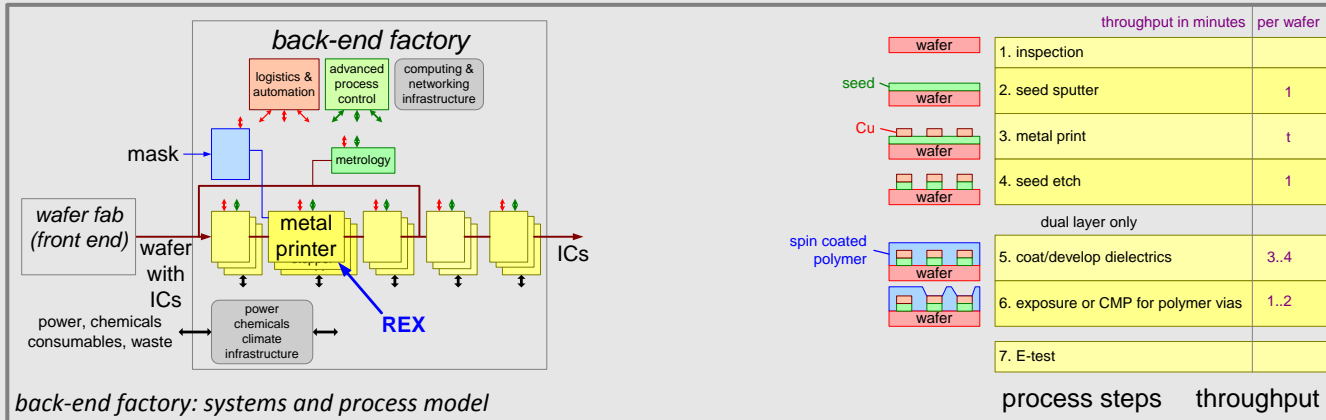
Context
Environment

Zooming in and out
from **nano** to **giga**

Dynamics
Emergence
Qualities

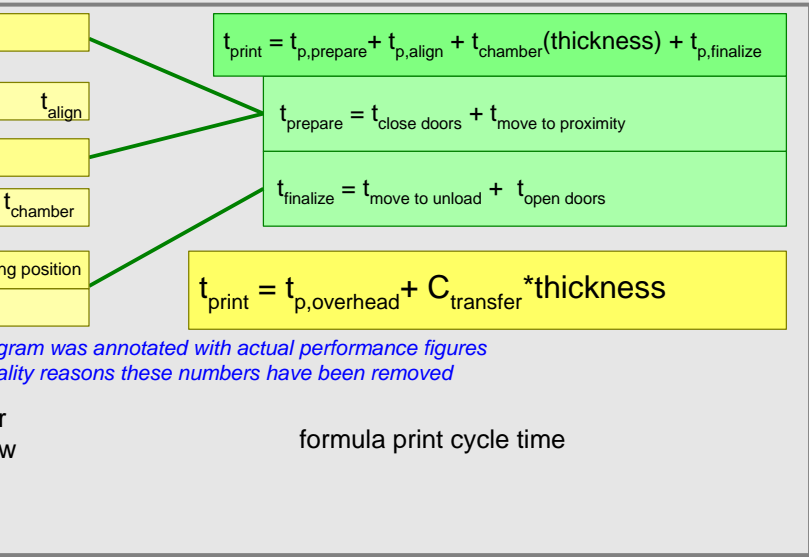
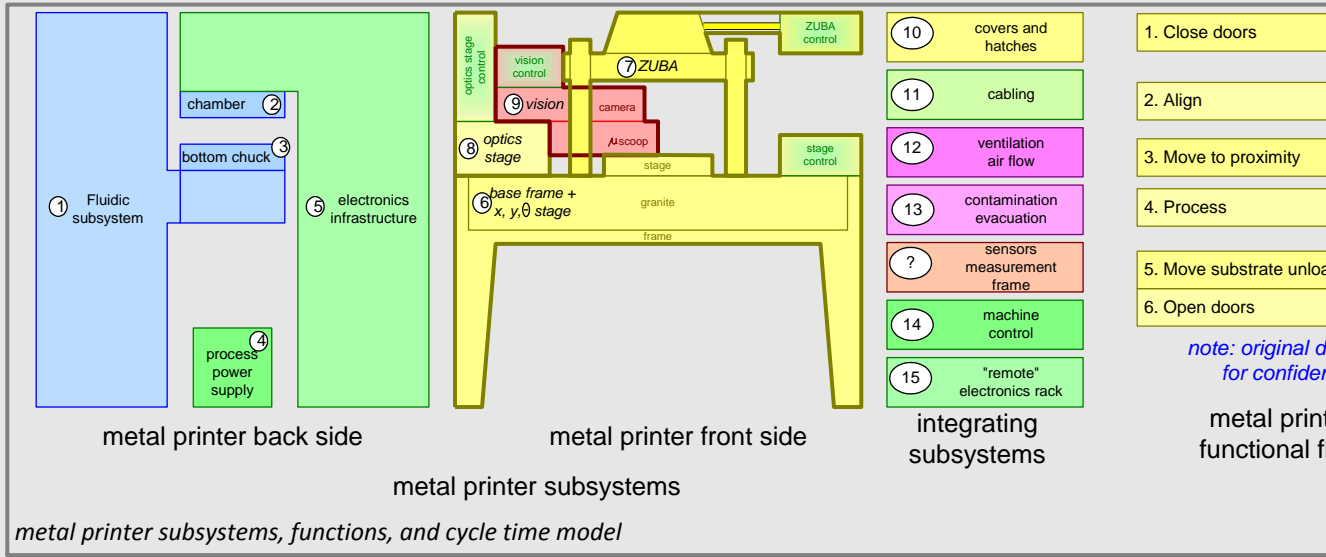
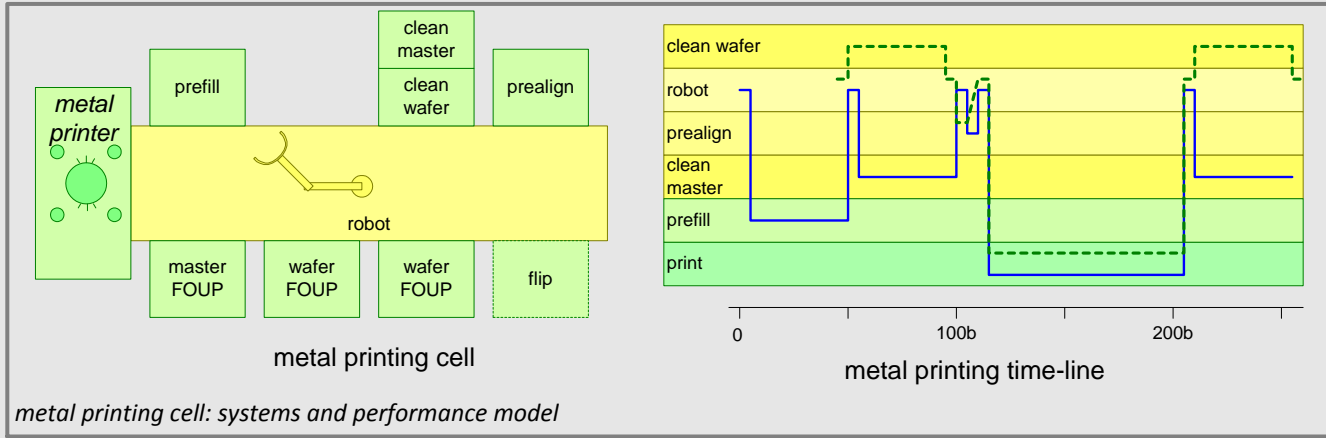
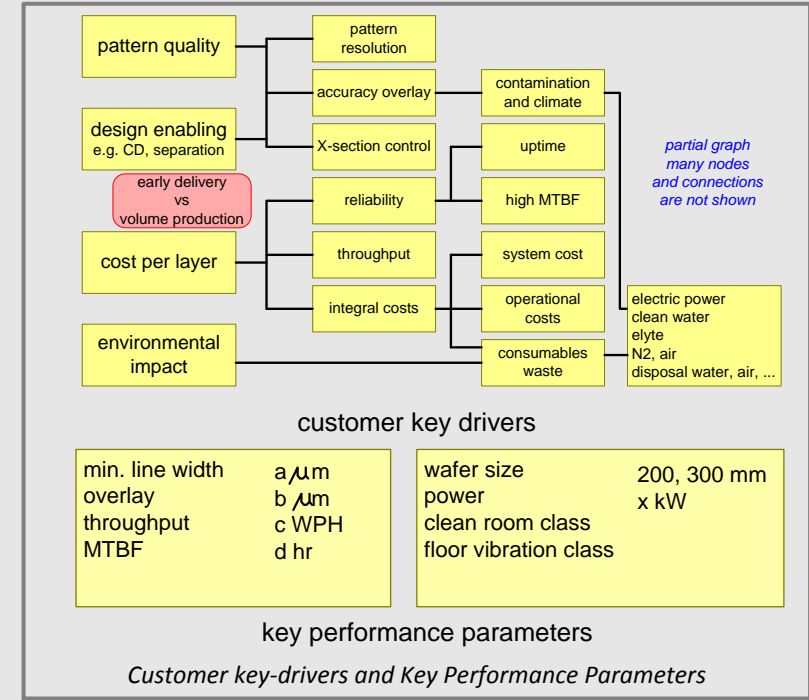
Number of viewpoints =
 \sum **concerns**
stakeholders

A3 architecture overview of the Metal Printer (all numbers have been removed for competitive sensitivity)



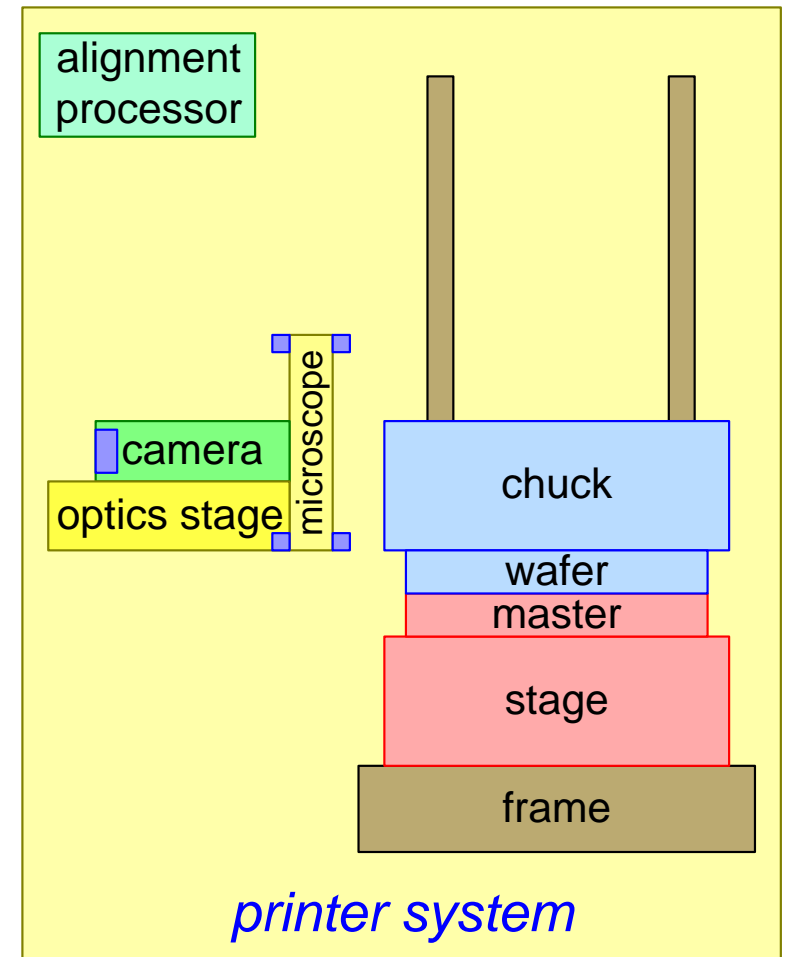
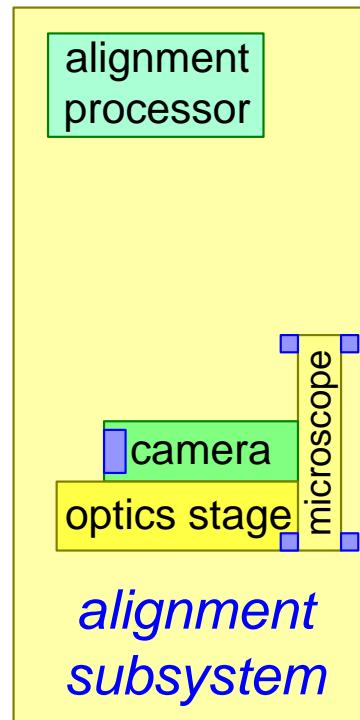
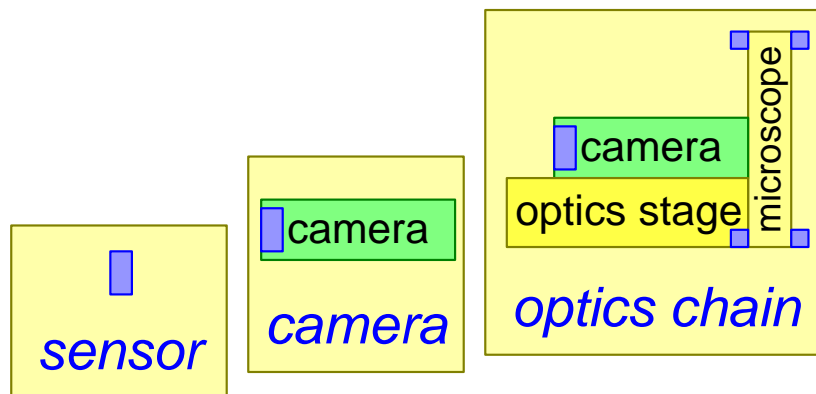
author Gerrit Muller scope system and supersystem
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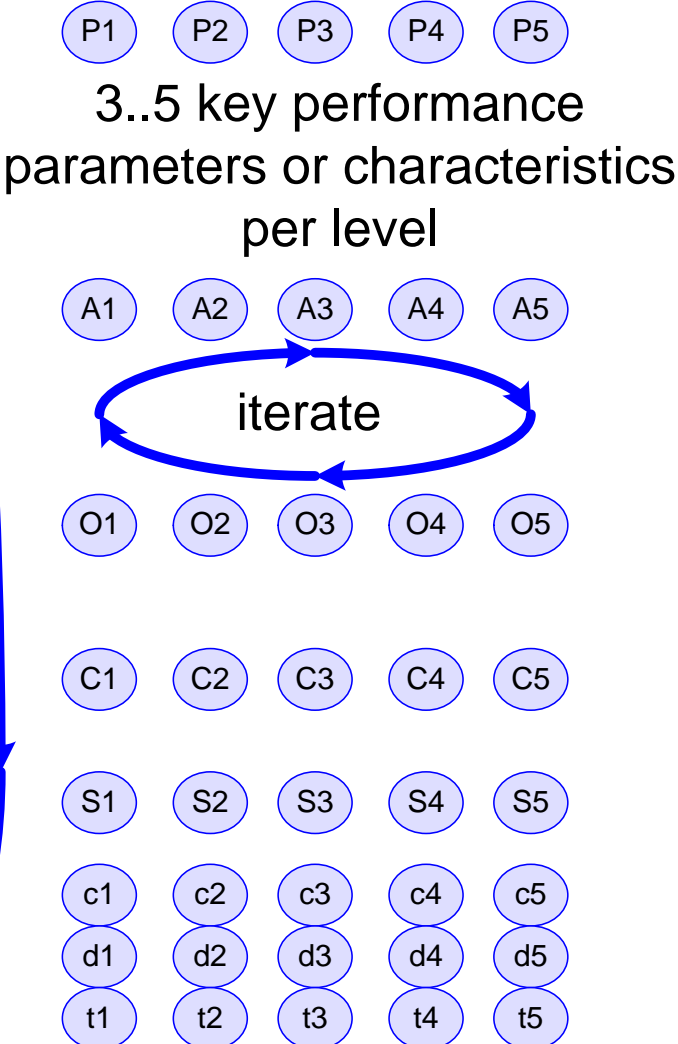
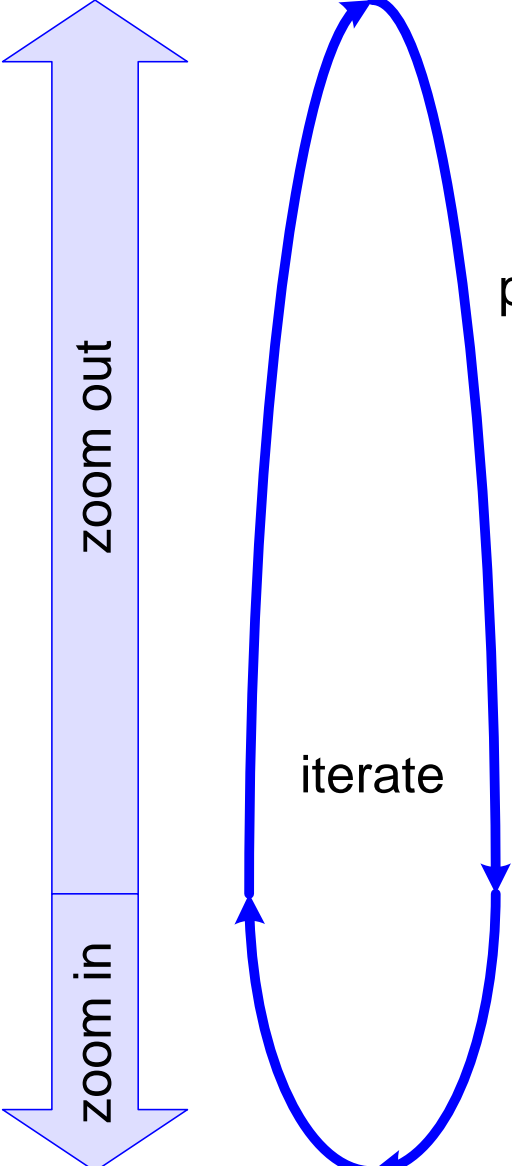
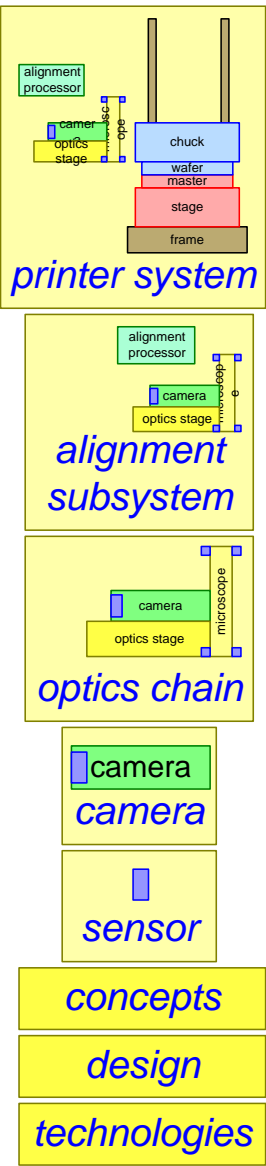


Zooming In

what is a good
imaging sensor for
a metal printer?



Many Perspectives at Many Levels



ESI research and Education 2002..2021



System architecting

System architecting addresses the challenge of getting the system design right from the start by helping customers to translate market, product, and technology choices into system concepts.

[Read more →](#)



System dependability

System dependability focuses on design for system availability, reliability, maintainability, and maintenance support performance.

[Read more →](#)



System evolvability

Research at and with the Dutch High-Tech Industry

ASML, Philips, Thales, Canon, Thermo Fischer, VanderLande, Signify, NXP, and more



Exploiting systems context

Exploiting systems context focuses on how to enable systems to be aware of their context, to be open and to react to changes.

[Read more →](#)



System performance

System performance focuses on quantitative design criteria for embedded applications and their resource utilisation in trade-off with cost.

[Read more →](#)



System architecting

[Read more →](#)



Systems integration

[Read more →](#)



System performance

[Read more →](#)

Education at the Dutch High-Tech Industry

ASML, Philips, Thales, Canon, Thermo Fischer, VanderLande, Signify, NXP, and many more



System dependability

[Read more →](#)



System evolvability

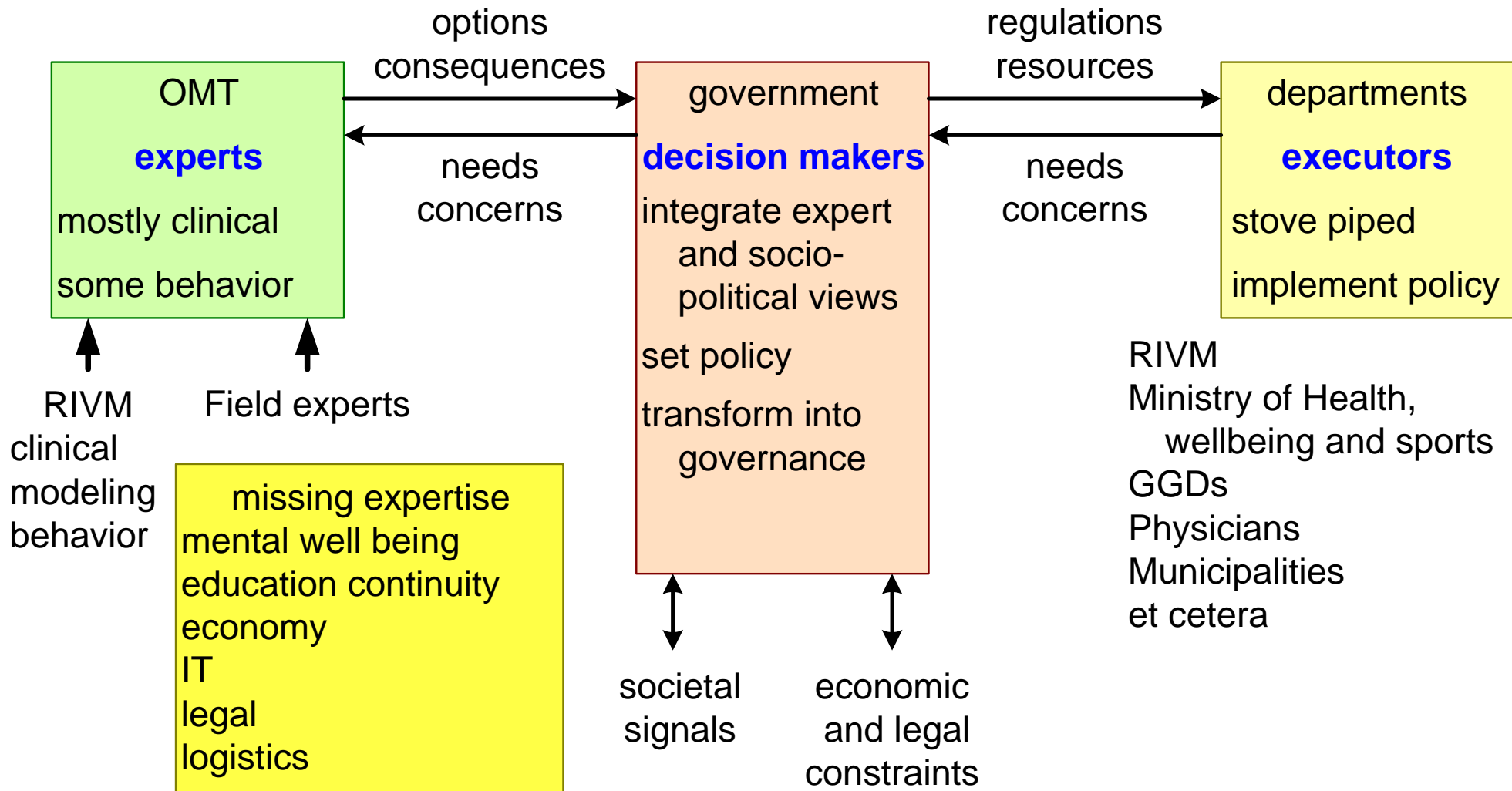
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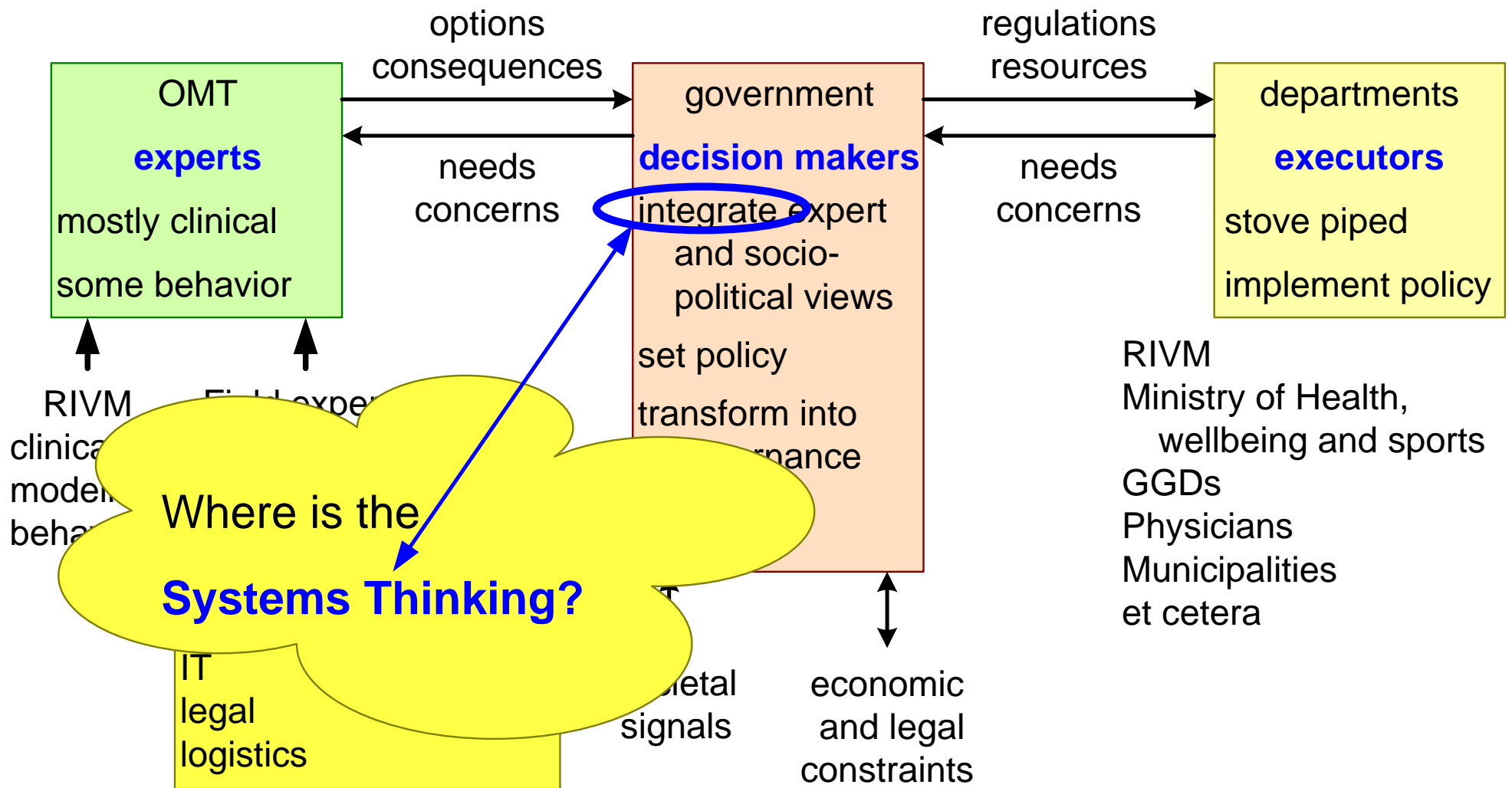
Exploiting systems context

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Roles in the Pandemic Situation



Who does the Systems Thinking?



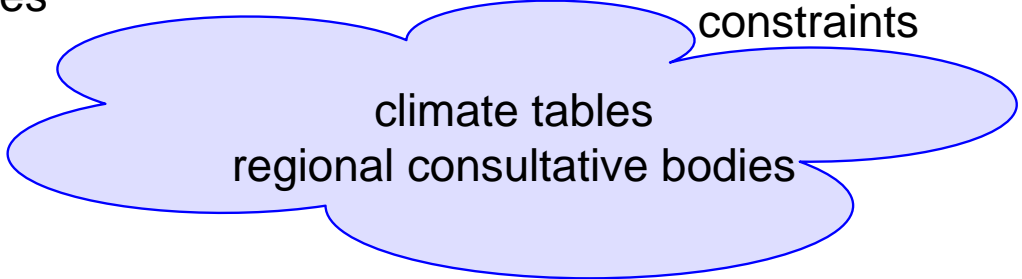
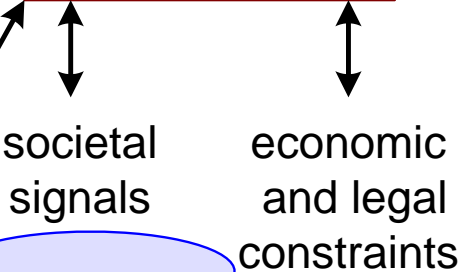
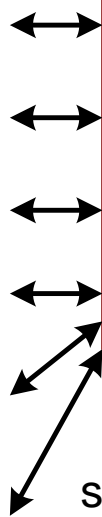
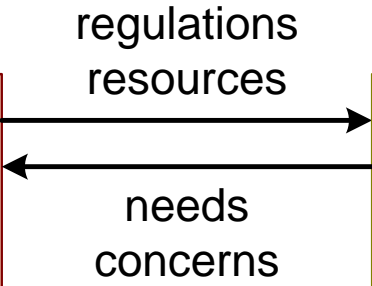
National Sustainability Organization(?)

experts
not defined
fragmented

- Ministry of Economic Affairs and Climate
- Ministry of Infrastructure and Water Management
- Ministry of Agriculture, Nature and Food Quality
- Ministry of Education, Culture and Science
- Plan Office for the Living Environment (PBL)
- TNO
- Consultancies
- Academics
- Suppliers

government
decision makers
integrate expert and socio-political views
set policy
transform into governance

departments
executors
stove piped
implement policy



Reflective Question

What range from nano to giga do you cover?

See some examples below

